

ATTACHMENT D
MFA EXCAVATION SOP

SAFETY PROCEDURES FOR TRENCH CONSTRUCTION AND OTHER EXCAVATING OPERATIONS

PURPOSE

This procedure contains an overview of the safety requirements for excavating and trenching operations and working in the area of heavy equipment. The requirements are consistent with standards established by the Occupational Safety and Health Administration (OSHA) and described in Title 29 Code of Federal Regulations (CFR) 1926.650. The detailed OSHA standard was effective in January 1990 and should be consulted before design of a shoring system, with questions regarding sloping options, or before working as a "competent person" on an excavation site.

RESPONSIBILITY

The responsibility and authority for excavating and trenching safety must be well defined prior to project start-up. The contractor will assume responsibility for excavation safety and Maul Foster & Alongi (MFA) will maintain safety responsibility and authority only for MFA employees. MFA employees will not serve in the OSHA defined role of "competent person" unless specifically defined in the project scope of work and approved by the Project Manager (PM) and Management Oversight Reviewer (MOR). The PM shall ensure that the MFA field staff clearly understands the limitation of their excavation safety responsibilities and authorities.

MFA employees are responsible for understanding the general excavation safety requirements for not entering improper trenches or excavations and for understanding the potential hazards of working near heavy equipment.

APPLICABILITY

This procedure is applicable to all MFA projects in which trenching or other excavating operations, exclusive of borings, are entered by MFA personnel or personnel employed by firms under contract to MFA. It is also applicable to MFA projects requiring MFA personnel or personnel of firms under contract to MFA to enter trenches and other types of excavations.

The best approach for avoiding the detailed trenching requirements is to perform sampling and other procedures without entry into excavations. Use of a backhoe to bring up samples, use of long-handled sampling devices, and similar techniques are recommended.

REQUIREMENTS

Preliminary Requirements

Certain government agencies (e.g. California) require a permit to perform excavation operations.

Before digging, determine or have the client determine if underground installations, such as sewer, water, fuel, or electrical lines are to be encountered, and if so, determine the exact locations of the

lines. Information can be obtained by contacting Underground Service Alert (consult local telephone directory for toll-free number), local utility companies, and the owner of the property on which excavating operations are planned.

Trees, boulders, and other surface encumbrances, located so as to pose a potential hazard to employees must be removed or made safe before the operation begins.

Placement of Excavated Materials

Excavated materials must be placed at least two feet back from the edge of the excavation and precautions must be taken to prevent the materials from falling into the excavation.

Working in Excavations

Shoring and Sloping

Except for solid rock, trenches in which personnel are required to work must be shored or sloped if the depth of the excavation is three (3) feet or more. When a shoring system is used, it shall consist of hydraulic shores or the equivalent, with sheathing or sheet piling as needed. Trench boxes are also permitted. OSHA uses a soil classification system to determine the allowable slopes for trenches. The shoring system must be properly designed and installed to sustain all existing and expected loads. For details on shoring and sloping requirements, consult Title 29 CFR, Subpart P, Sections 1926.650 to 1926.653.

Access

When work is to be performed in any excavation, safe access to the excavation must be provided by means of ladders, stairs, or ramps. Trenches four or more feet deep must have ladders spaced no less than 25 feet apart, and the ladders must extend at least three feet above grade.

Hazardous Atmospheres

At sites where oxygen deficiency or hazardous concentrations of flammable or toxic vapors or gases may be encountered in excavations, the atmosphere in the excavations must be tested by the site safety officer or other qualified person before work in an excavation begins and at appropriate intervals afterward. Trenches may be classified as confined spaces and require an entry permit. If trenches are recognized as a confined space by the MFA site safety officer (SSO) and the MFA health and safety coordinator (HSC), no entry will be made into the trench by MFA personnel.

Inspection of Excavation

Excavations must be observed daily by the "competent person". If evidence for potential cave-ins or slides is apparent, all work in the excavation must be suspended until necessary steps have been taken to safeguard employees.

Operations of Vehicles Near Excavations

When vehicles or heavy equipment must operate near an excavation, the sides of the excavation must be shored or braced as necessary to withstand forces exerted by the superimposed load and the earth pressure. Stop logs or other types of secure barriers must be installed at the edges of the excavations.

Worker Safety Around Equipment

All vehicles should be parked far enough away from heavy equipment routes to avoid possible collisions. All personnel should wear high visibility safety vests when working in the area of heavy equipment. Other applicable safety gear includes hard hats, safety glasses, steel-toed boots, and (if applicable) hearing protection. When working in the vicinity of heavy equipment, personnel should always be sure the equipment operators are aware of their presence. Never attempt to cross the path of heavy equipment even if they appear to be a safe distance away. Always be aware the height of certain equipment creates blind spots. Never stand near onsite heavy equipment if it is not moving, whether it is running or not.

Barricades and Fences

Drilling areas should be completely guarded on all sides with barricades or fences, if deemed necessary, to keep onsite personnel not involved with drilling activities a safe distance from the drilling rig. If barricades are used, they must be spaced no more than 20 feet apart and shall not be less than 35 inches high when erected. A yellow or yellow and black tape, at least 0.75 inches wide, shall be stretched between the barricades.

Backfilling

Excavated areas must be backfilled in accordance with the work plan as soon as practical after work is completed, and all associated equipment must be removed from the area.

EXCAVATIONS NEXT TO EXISTING STRUCTURES

A registered engineer will review all plans for excavations next to existing structures to avoid undermining the structures and possible collapse.